



**Office of Planning  
and Development**

# SELECTING RESILIENCE STRATEGIES THAT WORK FOR YOUR COMMUNITY

Local Government Training Workshop  
Erie County

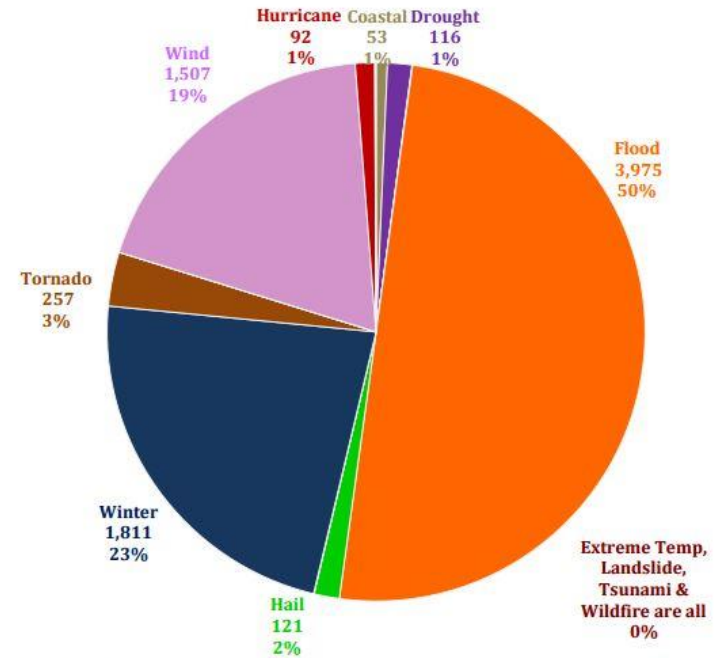
**An Office of the New York State Department of State**

Carolyn LaBarbiera  
Coastal Resources Specialist

May 3, 2017

# Resilience through land-use planning

- Resilience to.....
  - Flooding (↑precip, snowmelt, stormwater runoff)
  - Natural hazards (storms, erosion)
- Why land use planning?
  - Well within local governments' control
  - Many co-benefits
  - Effective tool to reduce flood risk



Source: SHEL DUS



<http://wivb.com/2015/07/14/flooding-in-parts-of-chautauqua-county-tuesday-morning>



Erie County Legislature



AP Photos/Gary Wiepert

A socio-economic analysis by The Economist Intelligence Unit

# Flood mitigation investment returns positive benefits

The benefits of flood mitigation go beyond dollars and cents. The Economist Intelligence Unit found that investment to make homes and infrastructure more flood-proof returns positive economic, environmental, and social benefits for communities. We reveal the flood mitigation actions, challenges and benefits for 11 flood-affected communities across the US.

Photo by Josh Funk Photography



[www.floodeconomics.com](http://www.floodeconomics.com)

## Benefits of mitigation

Economic benefits

**\$12.4 million**

Total monetized benefits

Return on investment <sup>③</sup>

**253.1%**

Estimated return on investment

Benefit-cost ratio <sup>③</sup>

**3.5**

Benefit-cost ratio of the DeKalb County projects



## Planning for resilience

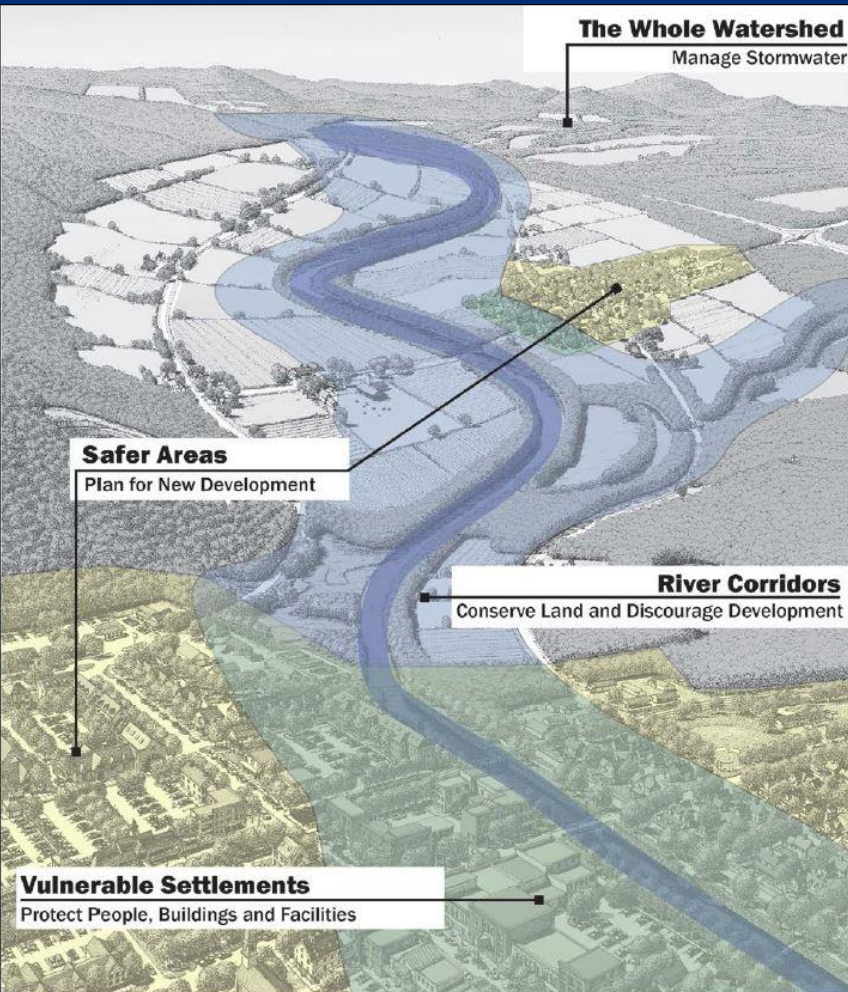
- Climate change information
- Identifying risk
- Needs and opportunities analysis
- Community engagement/dialogue
- Importance of plan updates to incorporate resilience (e.g. comprehensive plan, watershed mgmt. plan)



## Options to address resilience



- Land use management
  - Resilient construction
  - Natural protective features
- 
- Information/behavior modification
    - Market pricing
    - Structural defenses



## Regulatory

- Zoning
  - Zoning incentives
  - TDR
- Subdivision review
- Site plan review

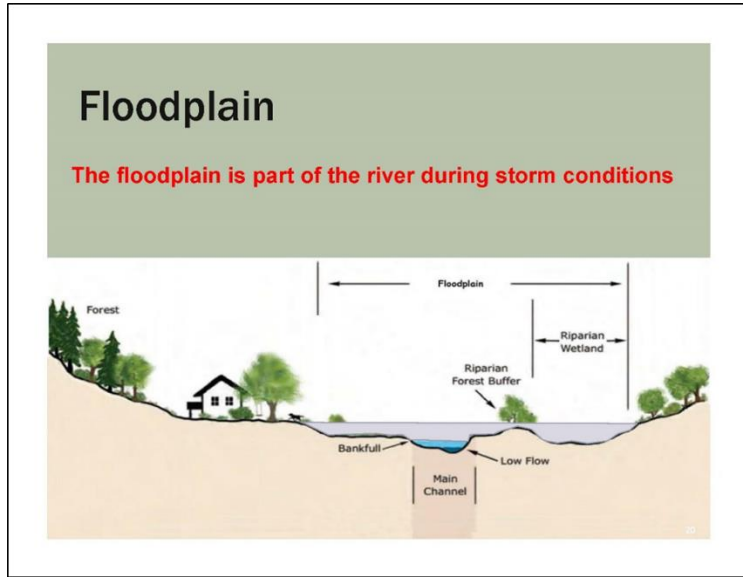
## Non-regulatory

- Land acquisition
  - Community Preservation Fund
  - Conservation easements
- Property buyouts
- Insurance
- Capital Development Plan



Office of Planning  
and Development

## Natural Features Reduce Risk

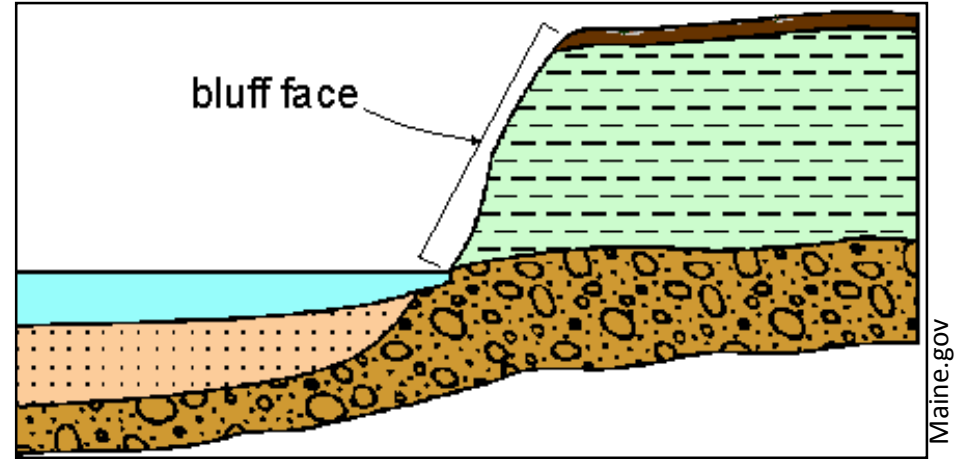


Delaware County Soil and Water Conservation  
District, Walton, NY

How do they reduce risk?

- Reduce energy
- Absorb water

An Office of the New York State Department of State



How do they reduce risk?

- Barrier
- Reduce energy
- Supplies sediment



## Community Risk and Resiliency Act: Model Local Law Categories

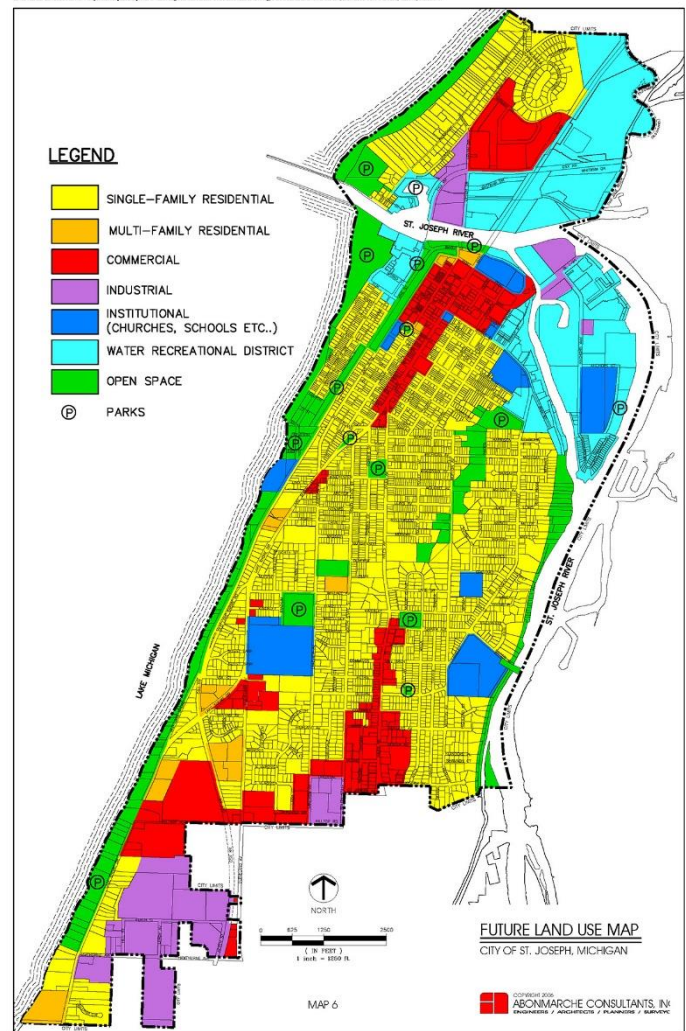
- Basic Tools
- Watercourse and Wetlands Protection Measures
- Coastal Shoreline Protection
- Management of Floodplain Development
- Stormwater Control Measures



An Office of the New York State Department of State

114

- An Office of the New York State Department of State



# Open Space



## Transfer of Development Rights (TDR)

- Identify land for protection
- Identify land for development

## Cluster subdivision

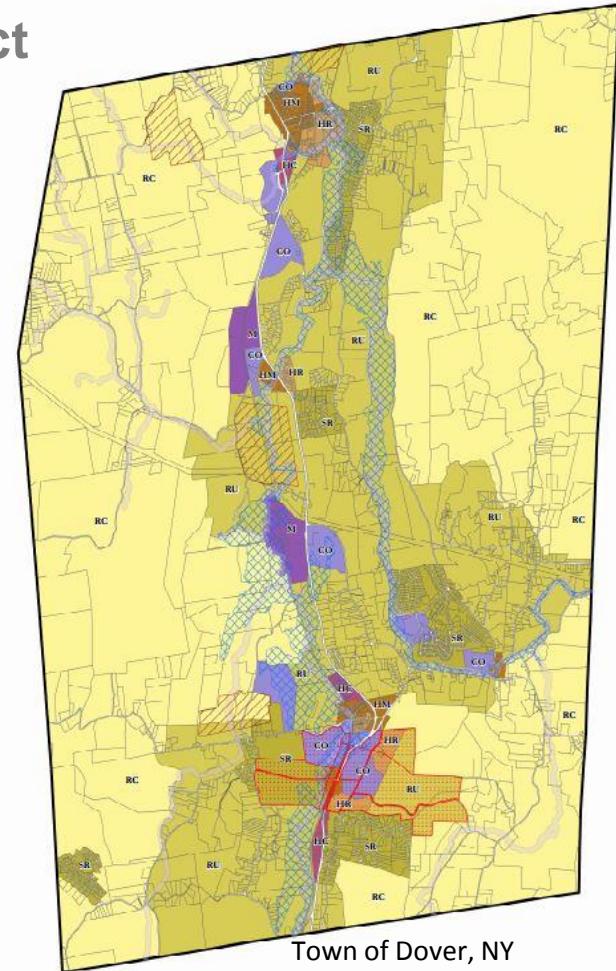


## Floodplain Overlay District

- A zoning overlay district that restricts residential and potentially hazardous uses in the floodplain
- Goal to limit flood damage and protect public health and water quality.
- Boundary follows NFIP 100-year floodplain

### Zoning Districts

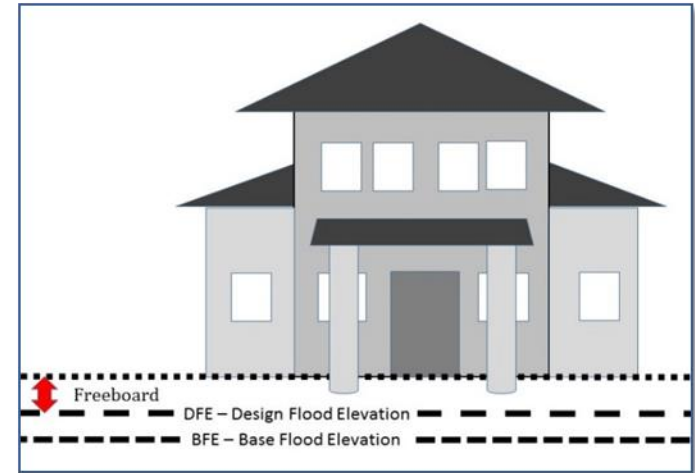
	CO, COMMERCIAL/INDUSTRY/OFFICE
	HC, HIGHWAY COMMERCIAL DISTRICT
	HM, HAMLET MIXED USE DISTRICT
	HR, HAMLET RESIDENTIAL DISTRICT
	M, INDUSTRIAL/MANUFACTURING
	RC, RESOURCE CONSERVATION DISTRICT
	RU, RURAL DISTRICT
	SR, SUBURBAN RESIDENTIAL
	MIXED USE INSTITUTIONAL CONVERSION OVERLAY
	FLOOD PLAIN OVERLAY DISTRICT
	SOIL MINING OVERLAY DISTRICT
	STREAM CORRIDOR BUFFER OVERLAY





## Base Flood Elevation vs. Design Flood Elevation

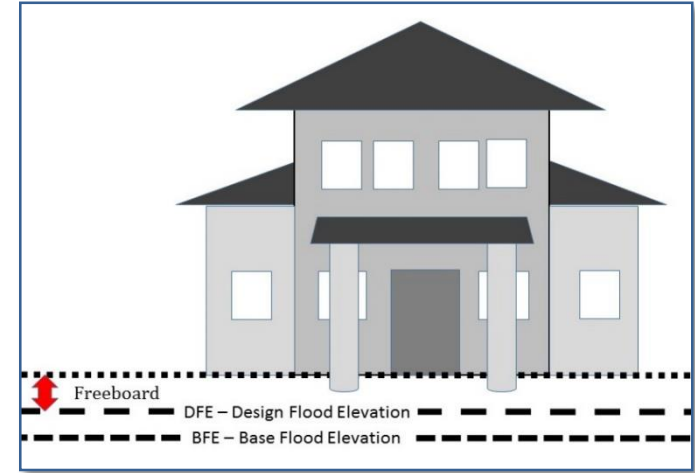
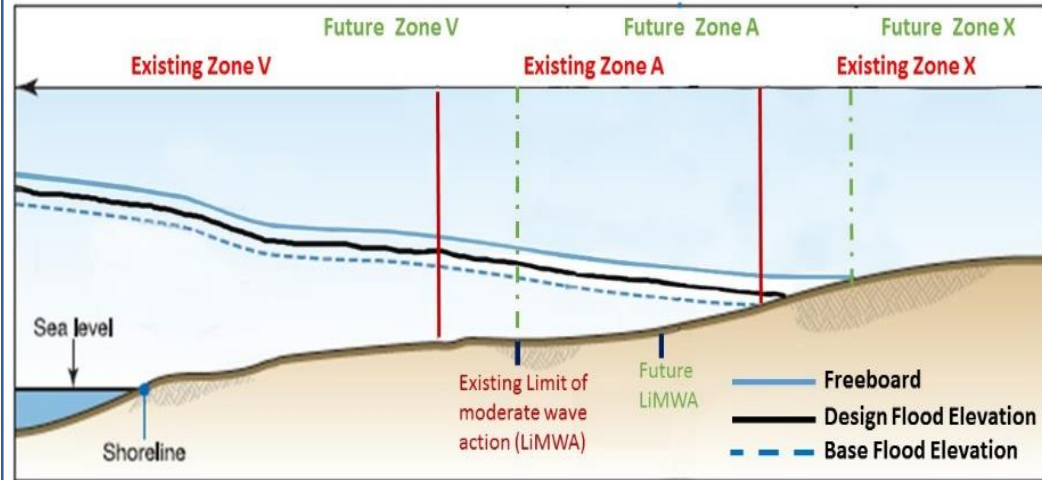
- BFE = the computed elevation to which floodwater is anticipated to rise during the base flood (100-year flood)
- DFE = The regulatory flood elevation adopted by the municipality that equals or exceeds the base flood elevation.
- Freeboard = The vertical difference between the lowest floor of a building and the BFE (in NYS, 2 feet)



## Establish Design Flood Elevation (DFE)

- Current freeboard (2 ft.) based on BFE
- DFE can be higher than BFE

### Adopt Design Flood Elevation to Anticipate Future Conditions



### Examples of basis for DFE:

- 500-yr flood elevation
- Extra height added to BFE
- Historical events
- Future conditions hydrology

## Stormwater Mgmt and Erosion & Sediment Control

- Updated Sample Local Law for stormwater management and erosion & sediment control
  - Base Version: MS4 General Permit updates, green infrastructure practices from NYS SWDM. Will be required for MS4 Operators
  - Resiliency Version: additional provisions that allow municipalities to require a more detailed green infrastructure site planning process & emphasize protection of buffers, floodplains, and coastal areas.



Buffalo Green Code

<http://www.dec.ny.gov/chemical/41392.html>



Office of Planning  
and Development

## Steep Slope Protection Overlay

- Goal: Minimize impacts of development activities
- Benefits
  - Enhance flood protection.
  - Maintain and improve surface water quality.
  - Preserve wildlife habitats
  - Protect stabilizing vegetation
  - Preserve aesthetics.
  - Maintain soils and slope stability.
  - Control adverse impacts of existing development.





## Shoreline Stabilization

Shoreline Stabilization techniques generally fall into three categories:

1. Natural
2. Nature-based
3. Structural

Shoreline protection alternatives analysis which promote the use of natural or nature-based methods through the site plan or special use permits process



# Street Design



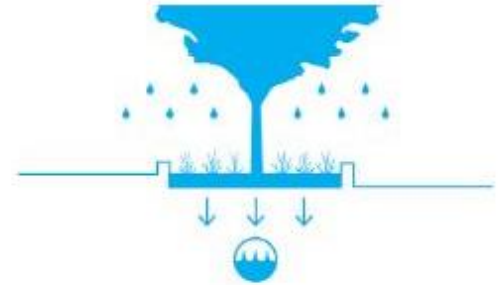
Ramboll



## Local Climate

Consider local climates, average temperatures, and frequency of extreme weather events.

- Protection from extreme heat, heavy rains, snow, or strong winds
- Minimize UHI
- Solar exposure and snow removal in colder climate
- Adaptable to natural disasters



## Green Infrastructure

Locate existing trees and planted areas. Take note of the local climate, planting seasons, and species. Identify the water table, sub-surface conditions, and utilities.

- Air quality improvement
- Shade
- Water management system improvement
- Native species
- Microclimate improvements

## Case Studies

### Village of Sidney GreenPlain

Strategy: Use sustainable green infrastructure to mitigate flooding along the Susquehanna River and Weir Creek for the Village and its neighbors:

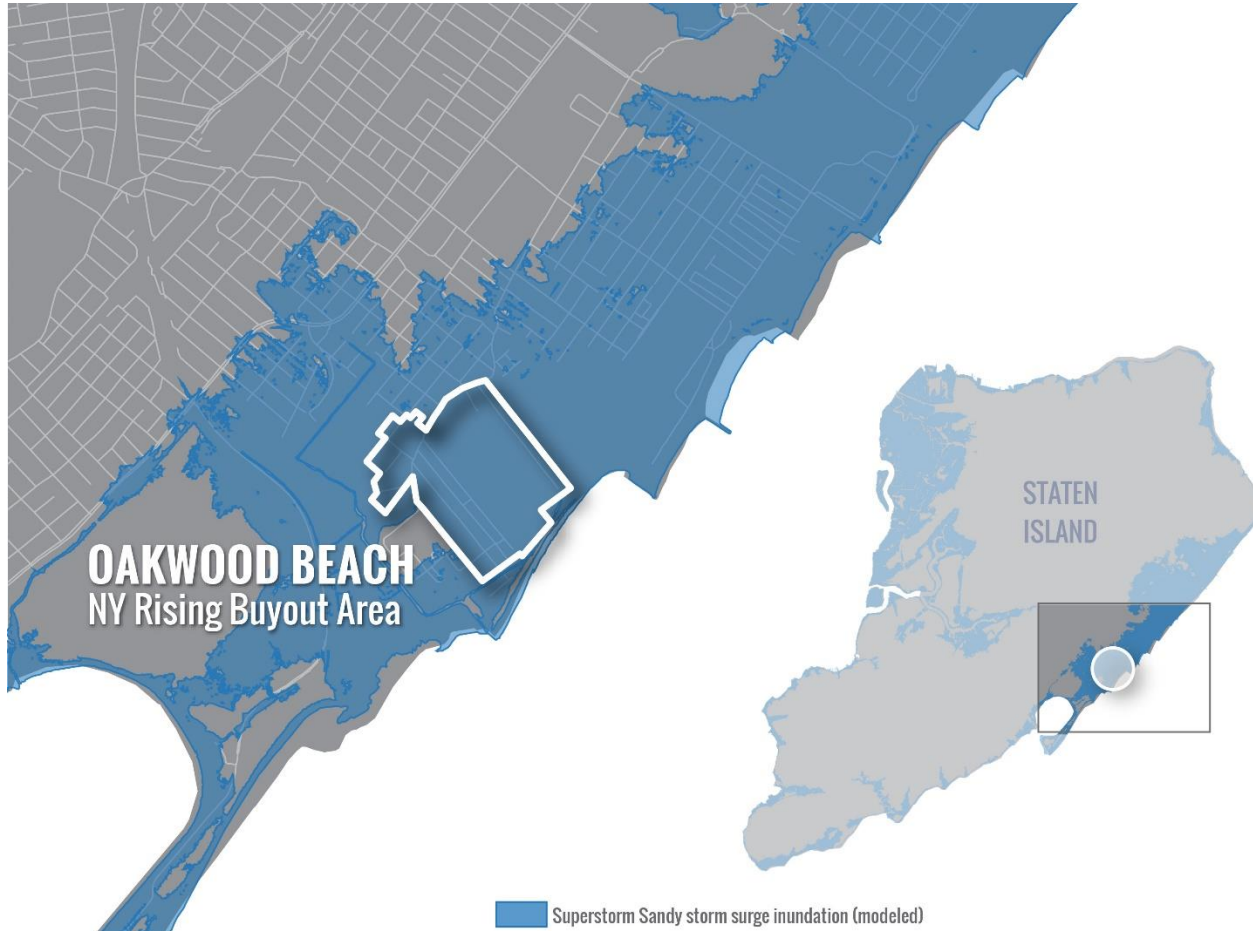
- Design, assemble, and construct the 140 acre Sidney GreenPlain- a high capacity floodplain and recreational area
- FEMA HMGP
- Buyouts of 135 properties



NEW YORK  
STATE OF  
OPPORTUNITY.

Office of Planning  
and Development

## Acquisition





## NYSDOS OPD Assistance

- Consolidated Funding Application 2017-2018: Environmental Protection Fund Local Waterfront Revitalization Program (\$15.2 M)
  - RFA Available May 1
  - Applications due July 28
  - Local Match Requirements: 25%
  - CFA Workshop at SUNY Fredonia May 4
- Technical assistance
  - Resilience planning
  - Shoreline management
  - Waterfront planning/LWRP

[Carolyn.labarbiera@dos.ny.gov](mailto:Carolyn.labarbiera@dos.ny.gov)

518-474-6000

[www.dos.ny.gov/opd/](http://www.dos.ny.gov/opd/)